LYME DISEASE. CLINICAL AND EPIDEMIOLOGICAL FEATURES

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Abstract

We note a high incidence of tick bites this year. Hospital of Infectious Diseases from Oradea registrated 650 cases, among theese 68 children age till 10 years, period may-september. We are concerned about secondary manifestations in time, Lyme Disease respectivelly.An estimated three quarters of all Lyme disease cases are acquired from ticks picked up during activities around the home, and/or recreational landscape. This article provides images of most important clinical manifestations of Lyme disease for recognition and promt medical check up for secundary specialised treatment and prevention. Education is as important in preventing disease as much as Lyme disease vaccine and environmental strategies.

Key Words: Tick bite, Borrelia burgdorferi, Lyme Disease, vaccine, pyrethrin, DEET.

INTRODUCTION

Lyme disease is a systemic infection caused by the spirochete *Borrelia burgdorferi*. The bacteria are inoculated into the skin by a tick bite, nearly always from hard-bodied ticks of the genus *Ixodes*.

Figure 1. Ticks (Meyerhoff John O et all (2011)

Ticks, like many mite species, are obligate blood-feeders, requiring a host animal for food and development especially white-footed mices and deers (Marques A. 2008).
Once in the skin, the spirochete :

- may be eliminated by host defense mechanisms
- may remain viable but localized at the site of inoculation
    - may disseminate via blood and lymphatics.
    - also can persist in the skin for very long periods of time

Hematogenous dissemination can occur within days or weeks of the initial infection.

- The pathophysiology of Lyme disease is incompletely understood.
- While any part of the body can be affected, the organism shows a distinct tropism for the skin, heart, central nervous system (CNS), joints, and eyes(Kemperman Mmet al 2009)

MATERIALS AND METHODS

In Hospital of Infecious Diseases of Oradea presented this year from march to september 650 patients secondary to tick bites, 341 males and 309 females.Most of them(319) were young people 11-30 years old, 68 children age 1-10 years old.

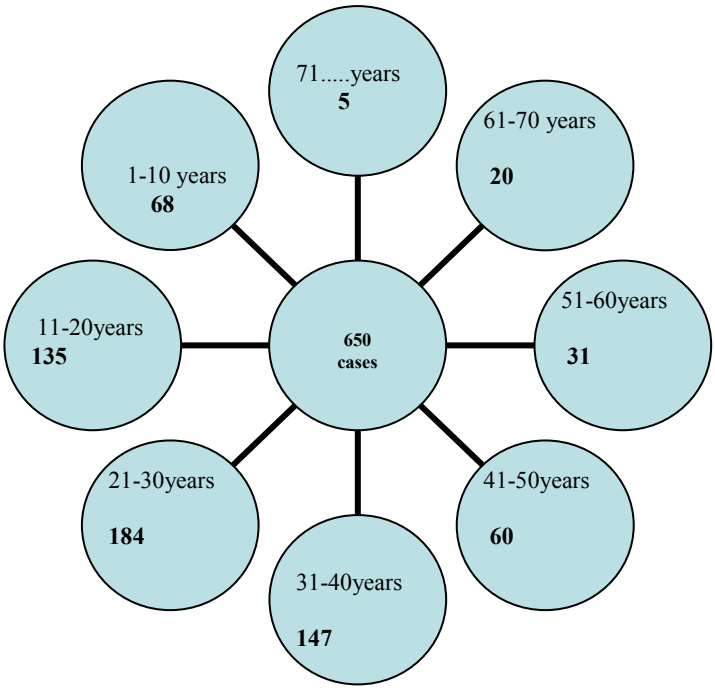

Figure 2. Distribution of patients by age

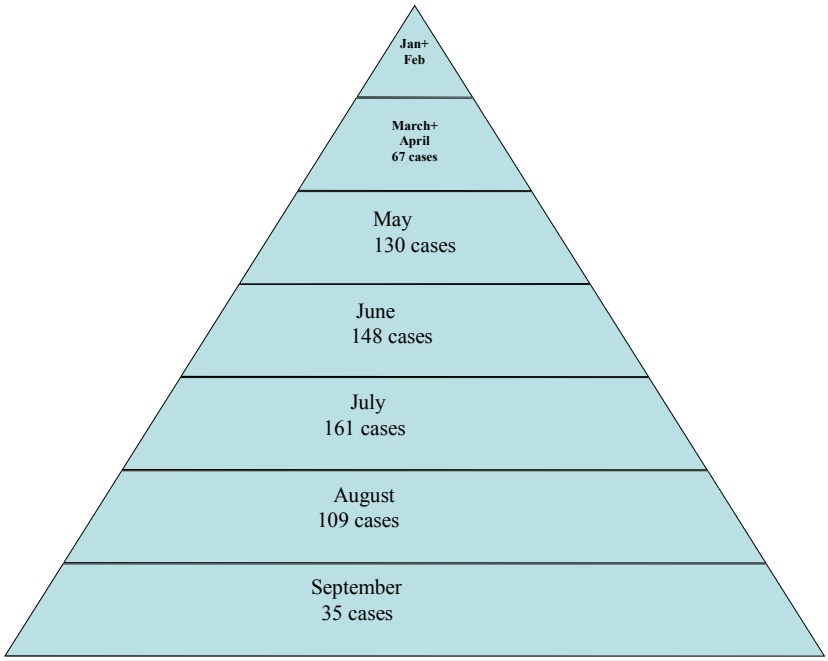

Figure 3.Distribution of the number of patients presented in different month

RESULTS AND DISCUSSION

We are concerned about high rate of tick bites and consider neccessary to provide informations about clinical manifestations of Lyme Disease for recognision and further medical check up as well as preventive measures.We did explain to these patients that epidemiologic context is extremely important for diagnosis.Since only approximately 25-30% of patients with early Lyme disease recall the tick bite, the history must be directed towards the possibility of a tick bite determining where the patient lives, works,vacations, asking about specific activities.The likelihood of Lyme disease increases as the probability of a tick bite increases in a geographically endemic area. The season is important, especially in patients with early disease. Most cases occurs from May through September because the nymphal stage of the tick is responsible for most cases.

The rising incidence of Lyme disease is due to a number of factors including: increased tick abundance, overabundant deer population, establishment of more residences in wooded areas, increased potential for contact with ticks.(Stanek G, Strle F 2008).

Lyme disease classically has been divided into 3 stages:Early localized Lyme disease,Early disseminated disease, Late Lyme disease(Nau R,et al 2009).

Clinical manifestations for *Early localized Lyme disease* are: *erythema migrans* and,or patients who present with an undifferentiated febrile illness.(Aucott Jet all 2009)

Classic *erythema migrans* begins as an erythematous macule or papule at the site of the tick bite (within 1-33 days, median is 7-10 d).May be warm to the touch, but it is usually not painful and is rarely itchy.

The eruption gradually enlarges by a few centimeters per day, expands *over days to weeks* (not hours or months), sometimes leaving central clearing.

Images from Courtesy of Lyme Disease Foundation, Hartford, Conn.(Meyerhoff John O, MD; Chief Editor: Burke A Cunha, MD (sep 27,2011) Lyme Disease, Medscape)

Figure 4. Typical Skin Lesion*: Erythema Migrans*

Classic target lesion with concentric rings of erythema, which often show central clearing.

Figure 5. Figure 6.

Early disseminated disease: refers to the secondary (usually hematogenously spread), occur during the initial weeks to months of infection.(Baker PJ.2008, . Wormser 2005).

Skin lesions-*borrelial lymphocytoma*

Extracutaneous manifestations*: lymphocytic meningitis*

cranial neuropathy (usually of the seventh nerve),

radiculoneuritis (Cameron DJ.2009)

carditis (often with fluctuating degrees of arteriovenous block) (Cameron DJ.2009)

Typical *borrelial lymphocytoma*

Figure 7.

Figure 8.

cranial neuropathy seventh nerve (Bell`s Palsy)

Late Lyme disease: manifestations that occur months to years after initial infection: *Acrodermatitis chronica atrophicans*(ACA)

Rheumatologic and Neurologic manifestations(Bozena 2012)

Figure 9.*Acrodermatitis chronica atrophicans*(ACA)

ACA can occur in any age group but it is most common in adults, mainly those in their 40s or 50s., usually do not remember tick bite in their past.

Patients who have had prior erythema migrans can be reinfected (meaning that the first infection has been successfully treated and they have a new infection with *B burgdorferi*).(Stricker RB,L. et al 2008).

In general, skin manifestations of Lyme disease respond promptly to appropriate antibiotic therapy. Early manifestations respond more rapidly than later manifestations.

PROPHILAXY (Centers for Disease Control and Prevention, Division of Vector-Borne Infectious Diseases. Lyme disease statistics: 2009, Johnson L,et al 2009)

VACCINES

Vaccinia virus(VV) based OspA vaccine is stable in an oral bait preparation and provides protection against infection for both the natural reservoir and the tick vector of Lyme disease(Bhattacharya D;et al 2011, Centers for Disease Control and Prevention. Vaccines and preventable diseases: Lyme disease vaccination 2011, .SchuijtT.J.et al,2011).

Basic strategies for preventing Lyme disease include environmental and personal strategies.

Environmental strategies: Distribution of pyrethrin-impregnated cotton balls in habitat of white-footed mice kills ticks overwintering with mice, use of fungal pathogens and plant extracts as biopesticides to control ticks, manage pet activity, keep dogs and cats out of the woods to reduce ticks brought back into the home, tick collars for pets.(Kirby C. St, 2007).

Personal strategies: avoidance and reduction of time spent in tick-infested habitats, using protective clothing and tick repellents - DEET applied to skin

and permethrin applied to clothing, checking the entire body for ticks and promptly removing attached ticks.(Mark S Fradin et all 2012).
Products containing 10-35% DEET are sufficient to provide adequate protection from ticks; children will not be exposed to products containing more than 10%.(American Association of Pediatrics Committee on Environmental Health(2011, Feder HM Jr(2008).

CONCLUSION

Early diagnosis of Lyme disease is important to resolve current signs and symptoms, eliminate *B. burgdorferi* infection, and prevent later complications; therefore, education is important in preventing or mitigating disease. Landscape and host management practices combined with the judicious use of an acaricide can provide excellent tick control with minimal risk or impact to the environment or other wildlife.

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